A new species of *Asystasia* from southern Africa, with notes on its alliances

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A new species of *Asystasia* from the southern African Lowveld is described. Its pollen and seed morphology are illustrated and its close relationship to *A. subbiflora* C.B. Cl. is discussed.

'n Nuwe spesie van *Asystasia* wat in die Laeveld van suidelike Afrika voorkom, word beskryf. Die stuifmeel en saadmorfologie word geïllustreer en die noue verwantskap aan *A. subbiflora* C.B. Cl. word bespreek.

Keywords: *Asystasia*, *Acanthaceae*, Lowveld, new species, palynology.

Introduction

The genus *Asystasia* is distributed throughout tropical and sub-tropical regions of the Old World. In South Africa about six species occur, excluding *A. natalensis* C.B. Cl. and *A. stenosiphon* C.B. Cl. which were recently transferred to the genus *Salpinctium* (Edwards & Getliffe Norris 1989). A new species closely allied to *A. subbiflora* is described. With the resolution of these species it becomes apparent that *A. subbiflora* is narrowly distributed and possibly a serpentine endemic (K. Balkwill, pers. comm.).

Description

Asystasia retrocarpa *T.J. Edwards* sp. nov.

A. subbiflora C.B. Cl. affinis sed habitus erectus vel decumbens non procumbens, pedicellis puberulis non glabrescentibus, corolla diminuta et alba.

TYPUS.— Natal: Ingwavuma, Ndumu Nature Reserve, Mkonjane, *E.S. Pooley 1601* (NU, holotypus; PRE, isotypus).

Erect to decumbent perennial up to 350 mm tall, sparsely pilose to glabrous; stems angular, narrowly winged, well branched throughout. *Leaves* oblanceolate to obovate, up to 50 × 18 mm; base attenuate, decurrent on petiole; apex acute to rounded; lamina amphistomatous, usually with sparse, sessile, glandular trichomes; margins and veins usually sparsely pilose. *Inflorescence* a 2- to 5-flowered helicoid cyme; peduncle glabrous or sparsely pilose; bracts narrowly lanceolate, up to 3 × 0.5 mm, bracteoles slightly smaller, abaxial surface sparsely covered with sessile glandular trichomes, adaxial surface with stalked glandular trichomes; pedicels densely retrorse-pilose, up to 2.5 mm and straight in young flowers, up to 5 mm and reflexed in fruiting specimens. *Calyx* pentamerous, sepals free, narrowly lanceolate, 5.5 – 7.0 × 0.8 mm, outer surface sparsely and shortly pilose, inner surface with stalked glandular trichomes. *Corolla* outer surface with short glandular and coarse eglandular trichomes, inner surface hairy near the base, tube 6.0 – 7.5 mm long, bilabiate; upper lip 4.5 – 6.0 mm long, 2-lobed, lobes 1.5 – 2.0 mm long; lower lip 4.5 – 6.5 mm long, 3-lobed, with a well-developed palate, lateral lobes 2 × 1 mm, middle lobe 2.0 × 2.5 mm. *Stamens* inserted; anthers muticous, thecae 1.5 mm long, slightly divergent; filaments sparsely hairy. *Pollen* prolate, tricolporate; stopples prominent, bipartite (Figure 1). *Ovary*

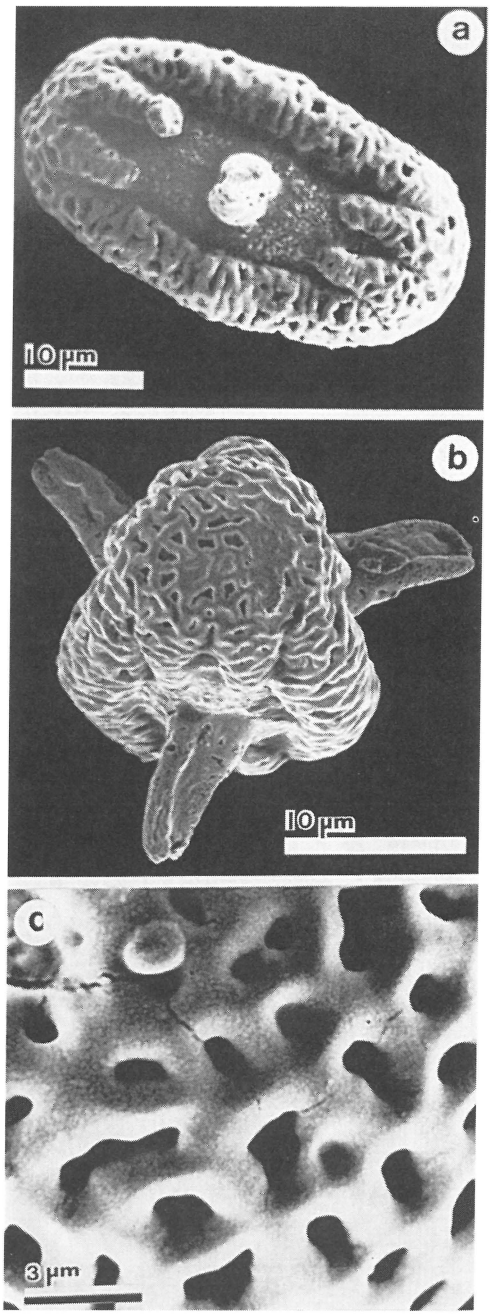

Figure 1 S.E.M. micrographs of *A. retrocarpa* pollen. a. Equatorial view; b. polar view; c. detail of tectal sculpturing (*Pooley 1601*).

glabrous, 2 mm long; style glabrous, 8.5 – 9.0 mm long; stigma bifid, upper lobe 1 mm long, lower lobe 0.75 mm long. *Capsule* glabrous, stipitate, slightly compressed, 16 – 19 × 4 – 5 mm. *Seed* strongly compressed, asymmetrically ovate, 5.0 – 5.5 × 2.5 – 3.5 mm, marginal ridge prominent, lateral faces with longitudinal ridges interspersed with tubercles (Figure 2).

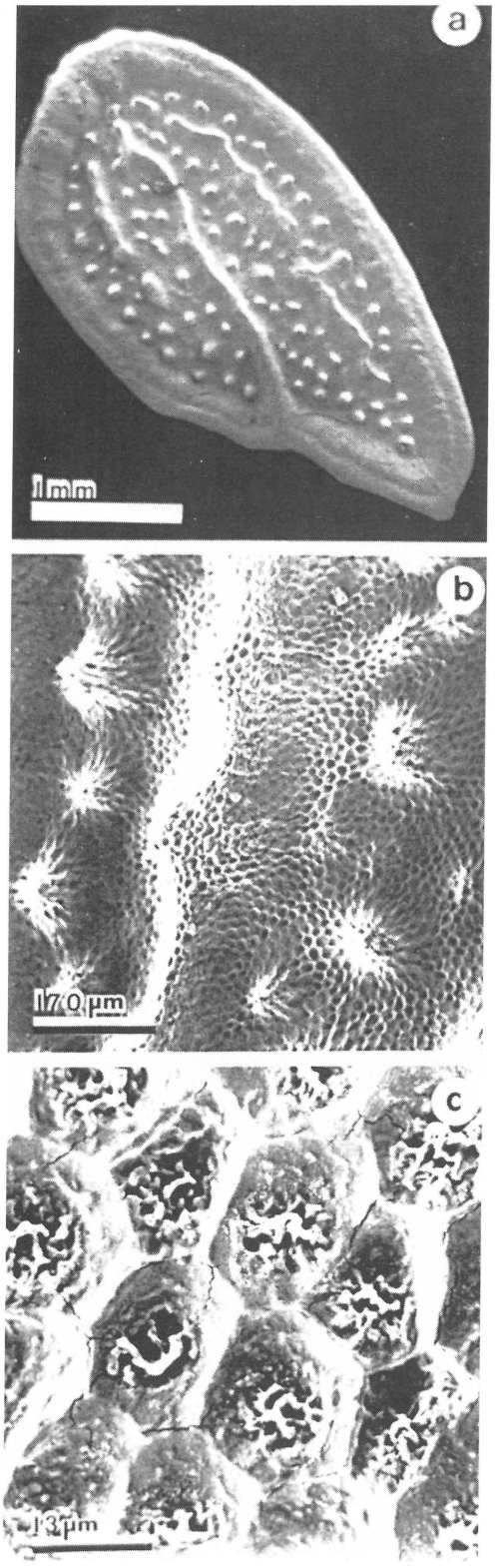

Figure 2 S.E.M. micrographs of *A. retrocarpa* seed. a. Whole seed; b. & c. detail of testal sculpturing (*Marques 2697*).

Discussion

The distributional range of *A. retrocarpa* extends from northern Natal to the north-eastern Transvaal (Figure 3). Its limited occurrence in Mozambique is almost certainly the result of undercollection. The species occurs in Lowveld, Arid Lowveld and Mopani Veld (Acocks 1988). In contrast, the narrow range displayed by *A. subbiflora* is similar to a number of other taxa (Balkwill & Balkwill 1988) and correlates with some of the serpentine soils near Barberton.

Pollen of *A. subbiflora* and *A. retrocarpa* is very similar. Both species have radiosymmetrical, tricolporate, prolate pollen with a pronounced, narrowly conical, bipartite stopple at each germinal aperture. This stopple appears to react in conjunction with hamomegathic changes of the grains, parting under high moisture regimes (Figure 4) and closing when dry (Figure 1). This condition is absent elsewhere in the genus, where stopples are simple.

The most obvious differences between *A. subbiflora* and the new species pertain to habit. *A. subbiflora* is a prostrate herb with flaccid stems (Figure 5) while the new species is an erect to decumbent herb with rigid stems (Figure 6). The leaves of *A. retrocarpa* are sparsely covered with coarse, broad-based trichomes while those of *A. subbiflora* are glabrescent. Close examination of the pedicels reveals another consistent difference. The pedicels of *A. subbiflora* are 7 – 15 mm long and are sparsely adorned with sessile

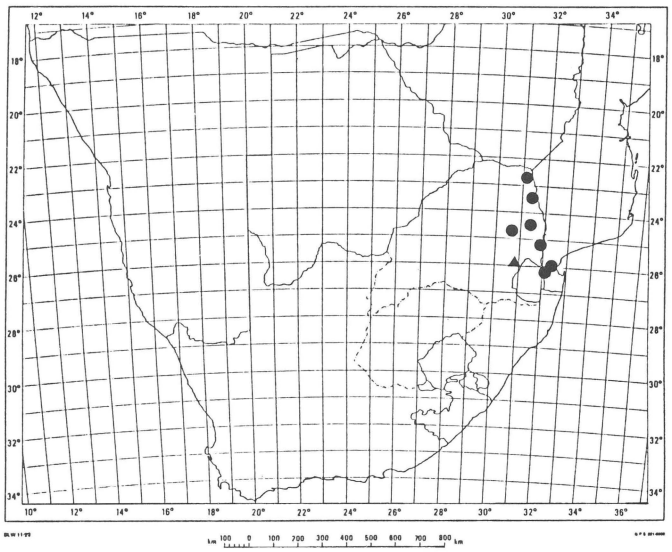

Figure 3 Recorded distribution of *A. retrocarpa* (●) and *A. subbiflora* (▲).

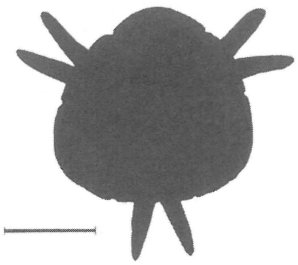

Figure 4 Diagrammatic polar silhouette illustrating the posture of the bipartite stopples in hydrated pollen of *A. retrocarpa*; bar = 10 µm (*Pooley 1601*).

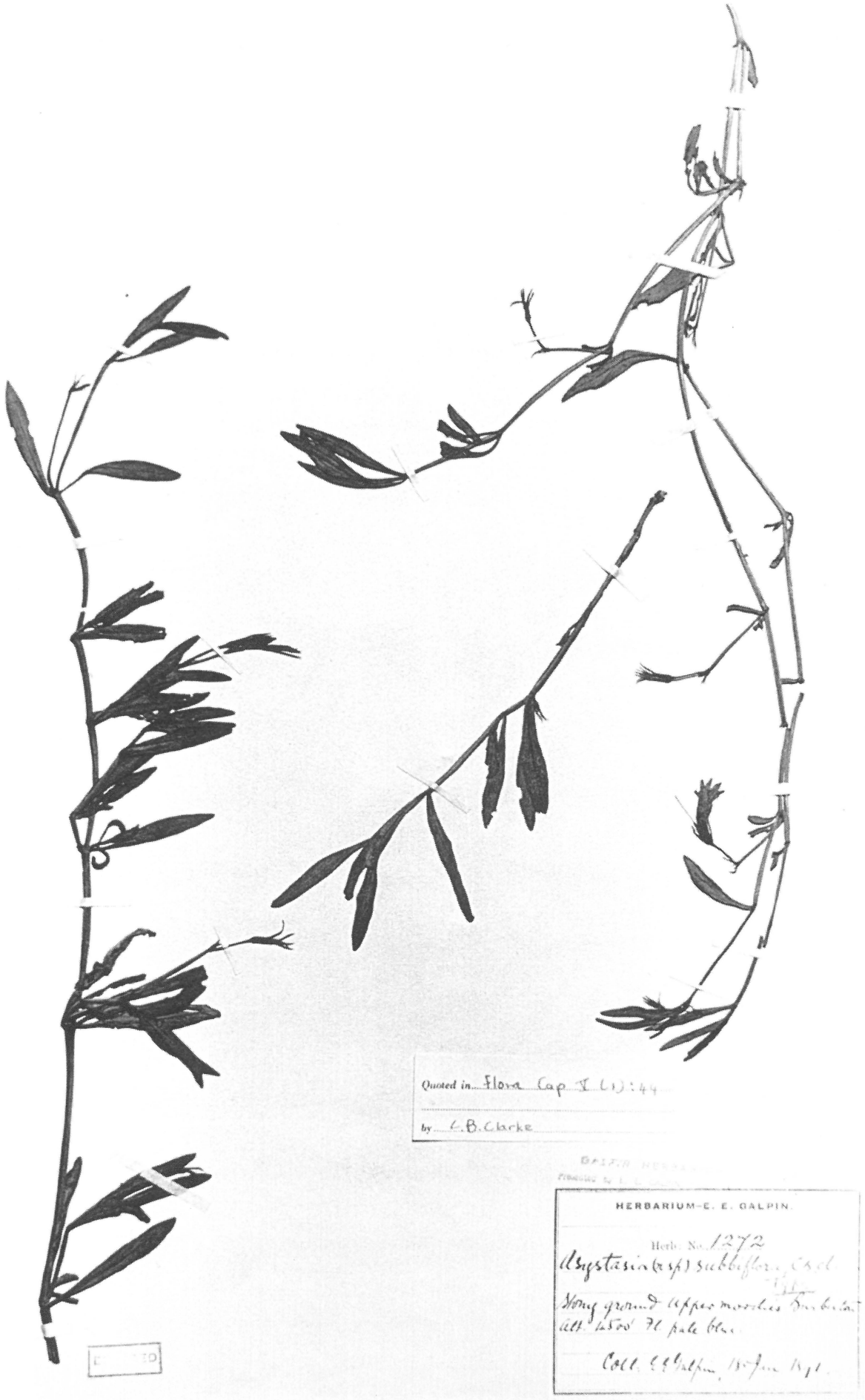

Figure 5 Herbarium sheet of *A. subbiflora* showing habit, ×0.6 (*Galpin 1272*).

Figure 6 Herbarium sheet of *A. retrocarpa* showing habit, ×0.8 (*Acocks 16730*).

glandular trichomes. In *A. retrocarpa* the pedicels seldom exceed 5 mm and are densely covered with retrorse trichomes. In both species helicoid cymes are produced. *A. subbiflora* has 1 – 2 pale mauve flowers per inflorescence and the corolla ranges from 17 – 20 mm in length. The flowers of *A. retrocarpa* are smaller (9 – 11 mm long), white and inflorescences may support up to 5 flowers. The flowers of the two species are similar in shape; both are strongly bilabiate with well-developed palates which partially occlude the corolla throats.

The specific epithet, *retrocarpa*, refers to the reflexion of the pedicel, after anthesis which is peculiar to both *A. subbiflora* and *A. retrocarpa*.

Specimens examined

A. retrocarpa

—2231 (Pafuri): Kruger National Park, Punda Milia (–CA), *Schlieben 9294* (PRE).

—2331 (Phalaborwa): Kruger National Park, Tendi Vlakte (–AD), *van der Schÿff 3527* (KNP, PRE).

—2431 (Acornhoek): Kruger National Park, Central District (–AD), *Coetzee 6067* (PRE).

—2531 (Komatipoort): Kruger National Park, Between Lower Sabie and Krokodilbrug (–BB), *van der Schÿff 1756 & 4032* (KNP, PRE); Nelspruit (–BB), *Acocks 16730* (PRE).

—2532 (Maputo): About 30 km from Boane on the road to Moamba (–CD), *Marques 2697* (LMU).

—2632 (Bela Vista): Ndumu Game Reserve, Ingwavuma, Mkonjane (–CC), *Pooley 1601* (NU, PRE).

A. subbiflora

—2530 (Lydenburg): Upper Moodies Barberton (–DD), *Galpin 1272* (PRE); Sassenheim Farm, Mt. Morgan Rd, 10.9 km WSW of Barberton (–DD), *de Souza 640* (PRE); Cythna Letty Flower Reserve (–DD), *Venter 9080* (PRE); *ibidem*, *D. Edwards 4077* (PRE).

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